DOCUMENT RESUME

ED 155 778 95 EA 010 594

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TITLE Wealth, Block Grants, and School District Expenditure in California. Draft.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Apr 77
CONTRACT 400-76-0019
NOTE 44p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Elementary Secondary Education; *Equalization Aid; *Federal Aid; Grants; Resource Allocations; School Districts; *School District Spending; School Systems; Socioeconomic Influences; Socioeconomic Status; *State Aid; Statistical Analysis; Statistical Data
IDENTIFIERS California

ABSTRACT

No matter what the basis of allocation of federal aid funds, a primary goal of most proponents of federal grants to local school districts is an increase in district expenditures. A study of 706 school districts in California, accounting for 95 percent of the state's elementary and secondary students, shows that about 70 to 80 cents of every federal grant dollar covers expenditures that would not otherwise have been made by the district, while only 30 to 40 cents of each dollar of state grants goes toward such expenditures. Important factors in the difference between the use of federal funds and the use of state funds include the tying of federal funds to new and specialized programs and the reluctance of districts to base local budgets on the expectation of continued federal support. Analysis of available data also indicates that state aid is not so closely related to district wealth, as measured by property value, that the effects of each on spending are inseparable. Title I fund allocations, however, correlate so closely with the number of students from families receiving Aid For Dependent Children that it is impossible to isolate the effects of Title I money.
(Author/PGD)

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Wealth, Block Grants, and School District Expenditure in California*

by

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January 1977

Revised, April 1977

EA 010 594

* Computer work for this report was handled by Chris Zook. The final product reflects the diligent questioning of Martin Feldstein.

NIE Contract #400-76-0019

A substantial portion of Federal aid to local school districts is given under Title I of the Elementary and Secondary Education Act. Title I funds are allocated to districts primarily on the basis of measures of poverty. The present formula is currently under review. The most talked about competitor to the poverty-based allocation scheme is one based on achievement test scores. The merits of poverty versus achievement based mechanisms are not discussed in this paper. But a question that is fundamental to an understanding of the effects of either is.

No matter what the basis of allocation of funds, a primary goal of most proponents of Federal grants to local school districts is an increase in district expenditures. The effect of Federal block grants, as well as the effects of State block grants and socioeconomic characteristics of districts, is investigated in this paper.

The results suggest that the effect on local expenditure of a dollar in Federal block grants is about 70 or 80 cents. Over time, the effect may become much smaller, possibly approaching the current effect of State block grants--30 or 40 cents.

The effects of property value, income, block grants, and other socio-economic characteristics on expenditures for public schools have been estimated using California school district data. Estimates are based on data from 706 of the 1066 districts in the state. The Census data that were used did not cover districts with fewer than 300 students. Over 95 percent of the students in the state, however, attend schools in the districts included in the analysis.

There are three administratively distinct types of districts in California, distinguished by student grade levels: unified (kindergarten through twelfth grade), elementary (kindergarten through sixth grade), and secondary (seventh through twelfth grade). In Massachusetts, for example, all districts are unified according to this classification. The districts used in our analysis include almost all the unified and secondary districts; those excluded are primarily small elementary dis[illegible]ts. About 63 percent of the students in the state are in the 223 unified [illegible]ricts we have used. The 372 elementary districts include about 21 percent, and the 104 secondary districts about 11 percent. The remaining 5 percent are mostly in the excluded elementary districts.

Expenditure function parameter estimates are presented for all districts together and for each district type separately. We have also presented separate estimates for instructional and other expenditures. For purposes of comparison with results for Massachusetts, estimates based on unified districts are likely to be the most useful. In general, the data for unified districts is likely to be the most reliable. This, together with the large number of students in them, suggests that the estimates for these districts should be given the most weight in evaluating the results. Estimates are based on financial data for the 1971-72 school year and the 1970 Census data.

We have obtained reasonably reliable estimates of the effects on expenditure of property value, personal income, and Federal and State block grants. We were unable to isolate the effect of Title I funds. The formula used to distribute these funds in California results in almost perfect collinearity between Title I allocations and the number of students from AFDC families. Thus, the effect on expenditure of Title I funds cannot be distinguished from the effect of socioeconomic characteristics associated with the number of AFDC students. Some indirect evidence of the likely effect of Title I revenue on

local expenditure is put forth, however.

The following section describes briefly the method used to distribute state funds to districts in California. The main question to be raised is whether or not the effect of State block grants can be distinguished from the effect of property value. The answer appears to be yes. The allocation of Title I funds to districts is discussed in the next section. The expenditure equation specification and parameter estimates are discussed in Section III. A few comments on the possible effects of Title I funds are contained in Section IV. Section V is a short summary.

I. The Allocation of State Aid

In the 1971-72 school year approximately 59 percent of expenditures for public schools derived from local revenue, 34 percent from State aid, and 7 percent from Federal aid. Local revenue is raised through a local property tax. State aid is entirely in the form of block grants. About 78 percent of total State aid is given according to a standard "foundation plan," that distributes funds in inverse relation to local property value. These funds are called "equalization aid" in California. A more detailed breakdown of revenues by source is presented in Table 1.

The foundation plan guarantees every district at least $125 per ADA (average daily attendance).[1] Above this minimum, the amount of aid depends on district type, as well as local property value. For elementary districts the formula is (1971-72):[2]

$$\frac{\text{Equalization Aid}}{\text{ADA}} = \text{Maximum of} \begin{cases} \$125 \\ \$391 - .008 \dfrac{\text{Property Value}}{\text{ADA}} \end{cases}.$$

Secondary districts are scheduled to receive aid according to the formula:

$$\frac{\text{Equalization Aid}}{\text{ADA}} = \text{Maximum of} \begin{cases} \$125 \\ \$524 - .01 \dfrac{\text{Property Value}}{\text{ADA}} \end{cases}.$$

Aid to unified districts is determined by applying the above formulas separately to elementary and secondary pupils and then aggregating the two. For our analysis, a primary question is whether or not state aid is so closely related to property value that separate effects of each on expenditure cannot be identified. Our investigation suggests that they are not.

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1. Funds are distributed according to the number of pupils attending school, as opposed to the number enrolled, or the number of school age children in each district. The analysis below is also based on expenditure per ADA, because reliable figures on the number of students were not available.

2. In fact, so-called "modified assessed" property value is used, which is intended to be comparable across districts.

Table 1. California School District Revenues, by Source, 1971-72.

Source	Amount (In Millions of Dollars)	Percent of Total
Total	5,210.2	100.0
Local and County	3,088.0	59.3
State	1.741.1	33.4
Equalization Aid[1]	1,500.3	28.8
Compensatory Education[2]	44.3	0.9
Other	196.5	3.8
Federal	381.1	7.3
Elementary and Secondary Education Act	149.7	2.9
Title I	134.7	2.6
Title II-VI	15.0	0.3
Other	.231.4	4.4

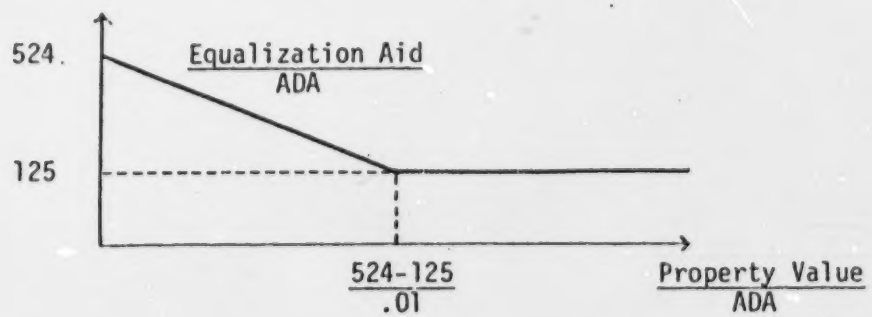
Source: Joint Legislative Budget Committee, Analysis of the Budget Bill of the State of California 1973-74, California Legislature, Sacramento, California, 1973, pp. 683-4, Tables 6 and 7.

1. "Regular Apportionments," largely equalization aid.

2. Source: Office of Education, Department of Health, Education, and Welfare, State Compensatory Education Programs, USGPO, 1975, p. 12.

There are two reasons why equalization aid is not perfectly correlated with property value. The first is that for various reasons equalization aid received by districts does not always match the amount prescribed by the formulas above, especially for elementary districts. Elementary districts are often grouped for purposes of equalization aid allocations and the amount given to the group subsequently divided among the individual districts in the group, apparently not according to the basic formula. For these districts the correlation between aid prescribed by the formula and aid received is .75. The correspondence between prescribed and received aid is much closer for secondary and unified districts, although they do not agree precisely. The relevant correlation is .98 for unified and .95 for secondary districts.

The second reason is simply the lower bound on the amount of equalization aid per student. The relationship between aid and property value per ADA, in secondary districts, for example, would look something like that described in the adjacent graph. Thus, even though the relationship is linear over a certain range, over all districts it is not. The result of these two factors is that



the overall correlation between property value per ADA and equalization aid per ADA is -.71 for unified, -.58 for elementary, and -.78 for secondary districts. In addition, in our specification below, we have combined equalization aid with

other State aid--not tied to property value--and with small amounts of county revenue, further reducing the relationship between our State aid variable and property wealth.[1]

1. Note that the question here is not one of bias in the estimate of a coefficient on State aid. It is one of identification of this coefficient. To identify the coefficient we need one of two situations: the relationship between property value and State aid is precise, but it is non-linear; or, it is not precise. We have both.

II. The Allocation of Title I Funds

Title I funds are allocated by the Office of Education to counties. Within counties they are allocated according to procedures set up by the "state educational authority." The primary legislative requirement is that funds should be allocated "on the basis of those available data which it deems best to reflect the current distribution in the country [of educationally deprived children] from low income families."[1]

Allocations to counties are in proportion to an "expenditure factor" times a "cost factor." The expenditure factor is constant for all counties within a given state. Allocations by the Office of Education to counties within a given State are proportioned to "the cost factor," which is given by,[2]

Number of students from families with incomes below $2000	+	Number of students from AFDC families with incomes exceeding $2000

Allocations to districts within counties in California are based on the number of AFDC children in each district.[3] In addition to these stipulations, there are a few "tacked on" provisions. In particular, under the "hold harmless" provision, no district can receive in a given year less than 80 percent of entitlement in the previous year; and special provisions exist for migrants, neglected and delinquent children, handicapped children, and Indians.

For the purposes of our analysis, we would like to be able to isolate the effect of Title I allocations on school district expenditures. To do this, however, we must distinguish the effect on expenditure of Title I funds

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1. 45 U.S. Code of Federal Regulations 4(b) 1974.
2. Over the period of our data.
3. Some school district boundaries cross county boundaries in California.

from the effects of demographic characteristics of districts, used as a basis for allocating the funds; namely "poor" children and AFDC children. In practice, we need to know if there is in fact a "close" linear relationship between poor and AFDC children on the one hand and Title I entitlements on the other. Based on the process described above, we would guess that there would be, although we would not expect the relationship to be perfect. In fact, the relationship is very close. The correlation between district Title I allocations per ADA and the number of students from AFDC families per ADA is .99.

Thus, we were unable to distinguish the effect on expenditure of Title I funds from the effect of factors assocaited with the number of AFDC students in each district. After presenting parameter estimates, however, some reasonable "guesses" of the likely effect of Title I funds are made.

III. School District Expenditure Functions

A. Specification and Variables

Individual, as well as aggregate, expenditures are normally thought of as being functions of income, prices, and possibly of other personal or demographic characteristics of "decision making" units. Common theoretical considerations suggest a non-linear relationship between expenditure and income, for example. In practice, expenditure functions specifications often imply constant elasticities of spending with respect to income, prices, and other variables; that is, they are log-linear.

Of primary importance in the determination of school district expenditures, however--and in fact other spending by local governmental or administrative units--are so-called block grants received from other administrative units. In the case of school districts the grants are primarily State and Federal. A constant elasticity relationship between block grants and spending is certainly unrealistic, at least at the extremes. For example, if grants are small and spending is large it is not reasonable to suppose that a 10 percent increase in grants will lead to the same percentage increase in spending that would occur if the reverse were true, that is, if grants were large relative to spending. The relationship between expenditure and block grants is more likely to be linear than of the constant elasticity form. An easy way to estimate linear and non-linear relationships in the same equation is to allow piecewise-linear specification of certain variables. We will follow this procedure.

Note that all grants we will refer to are block, not matching, grants. That is, they do not depend on local spending. Different matching rates across school districts--as in Massachusetts, for example--can be thought of as varying among districts the effective "prices" of educational expenditures.

Block grants can be thought of as shifting the position of the hypothetical budget constraints[1] faced by each district, while matching grants change their slopes. In California the price is equal to 1 for each district.

District expenditures are assumed to depend in our analysis on three general factors: local district wealth, grants to the district from other sources, and socioeconomic or demographic characteristics of district residents that may be thought to influence the average cost of education per child or the "taste" of district residents for public education.

Two measures of district wealth are included in our analysis--the value of local property,[2] specified as property value per ADA, and the median family income of residents. Both are specified in a piecewise linear manner. For example, let Y represent median family income, and let Y* be some particular value of family income; call it a "break point." Then there are two family income variables, Y_1 and Y_2, specified as,

$$Y_1 \equiv \begin{cases} Y & \text{if } Y \leq Y^* , \\ Y^* & \text{if } Y > Y^* , \end{cases}$$

$$Y_2 \equiv \begin{cases} 0 & \text{if } Y \leq Y^* , \\ Y-Y^* & \text{if } Y > Y^* . \end{cases}$$

The relationship between family income and expenditures per ADA, the independent variable in our analysis, could look something like that in the graph below.

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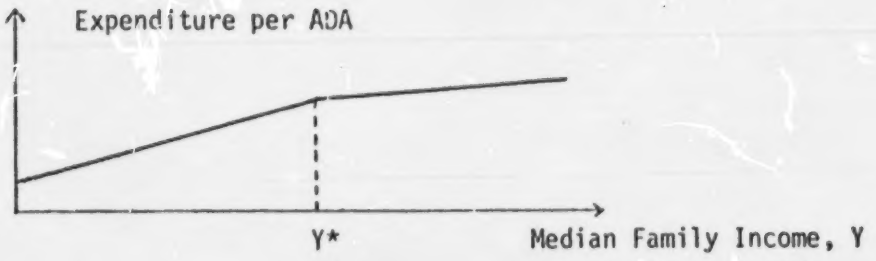
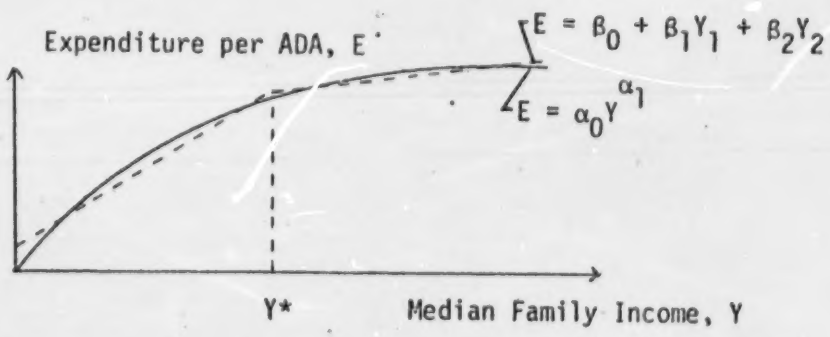
1. As long as spending is larger than the grants.

2. The values we have used are presumably comparable across districts and are intended to represent "market price."



The breakpoint for property value has been set at 100,000 dollars per ADA and at 10,000 for median family income, approximately their respective means.

The relationship between this specification and a log-linear one, for example, may be seen in the diagram below. Assume that the relationship between expenditure per ADA and median family income is of the form $E = \beta_0 Y^{\beta_1}$, with β_1 less than 1, or $\ell n\ E = \ell n\ \beta_0 + \beta_1\ \ell n\ Y$. The relationship is log-linear. It is indicated by the solid line in the diagram. The piecewise-linear specification that approximates the non-linear relationship is indicated by the dashed line. Although it approximates the non-linear--in this example, constant elasticity



log-linear--relationship between expenditure and income; it does not constrain the model to be log-linear throughout. That is, it would fit the data reasonably well if the relationship between, say, income and expenditure were log-linear, holding other variables constant; but it does not require a constant elasticity relationship between expenditure and all other variables, in particular block grants.

This specification results in two slope estimates: one for the lower and one for the upper segments of the dashed line; call them β_1 and β_2, respectively. Then the estimate for β_1 indicates the marginal effect on expenditure of an increase of one dollar in median family income, as long as income is below Y*. Above Y*, the effect is given by β_2. The estimated coefficient on Y_1 is β_1 and on Y_2 is β_2, where $E = \beta_0 + \beta_1 Y_1 + \beta_2 Y_2$ plus other variables, say. It can be seen that the estimates depend on the choice of the breakpoint, Y*. We have chosen the mean values of income and wealth because casual investigation suggested that this break adequately captured the non-linearity involved. Initially we tried specifications with more than two linear segments, but ultimately used only two.

In addition, when all districts are analyzed together, property value variables distinguish among district types. In unified districts, property value per ADA refers to aggregate property value divided by all the students in the district. But in elementary and secondary districts, while property value still refers to total property value of the district, ADA does not refer to all students. Only elementary and secondary students, respectively, are included. Therefore, the meaning of the variable differs among districts.

Two sources of block grants are distinguished: Federal grants, excluding Title I allocations prescribed under the Elementary and Secondary Education Act, and State grants. Included with State grants are county grants, which are very small. All are specified as per ADA. Title I grants are not directly included in the analysis. The effect of Title I funds is captured by the coefficient on AFDC students (discussed below), along with the effect on expenditure of demographic characteristics of districts that are associated with AFDC students. The estimated coefficient on the proportion of students from AFDC families represents an estimate for $b_1 + \alpha b_2$, where b_1 is the effect on

expenditure of demographic factors associated with AFDC students, b_2 is the effect of Title I funds, and α is the amount of Title I funds per AFDC student.

Several demographic variables have been included. We experimented with many others in preliminary analysis.[1] The proportion of non-public school children is assumed to affect the willingness of residents to spend money on public education. It is not clear a priori, however, whether the expected effect should be positive or negative. It could depend, for example, on the degree to which pupils who attend non-public schools also use the public school system. Non-public schools could be concentrated at either the elementary or secondary school level with most students who attend them also using the public system. Or, those who use non-public schools could tend to use public ones very little. We also note that expenditures in public schools and non-public school attendance may be simultaneously determined, at least to some degree. We have not taken account of it in our estimation, however.[2]

The education of district residents is also assumed to affect their willingness to devote resources to education. The variable we have used is the proportion of adult residents with college degrees.

Students per family is assumed to affect the cost per family in taxes of any given increase in expenditure per student. It may also affect the interest of residents in education. The first is likely to have a negative and the second a positive effect on expenditure per ADA. We measure the net effect.

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1. Including average years of education of adults, percent of poor families, percent of poor children, median value of owner occupied housing, and the distribution of residents among occupations.

2. We did obtain some two-stage least squares estimates allowing non-public school attendance to be endogenous. The basic results do not differ substantially from those shown here and are not reported.

The cost of education may also depend on the socioeconomic background of students. We have isolated several variables that are likely to capture the effect of student background: The number of AFDC students per ADA, the proportion of students from female-headed households, the proportion of students who are black, and the proportion with Spanish surnames. Estimates with the last two variables excluded are presented in an Appendix Table. Remember that the AFDC variable picks up the effect of Title I funds as well as the effect of underlying demographic characteristics of school districts. Of course, all of the demographic variables may reflect differences in "taste" or preference for expenditures for education versus other services, as well as differences in the cost of education.

It could be argued that these demographic variables capture effects of urban versus rural communities. This may well be true, but it is probably not the case that simply because districts are urban, their costs of (really expenditure for) education are different from those in more rural districts. Costs should not differ just because districts are more or less urban. Even among urban districts, they should be expected to vary. And they should vary according to the demograhic characteristics of the districts. But these are exactly the kinds of variables that have been used to serve as proxies for cost differences. Nonetheless, we tested for differences in expenditure by district size, and the results are reported below. Size might be expected to capture urban effects not picked up by the demographic variables.

Also, it should be kept in mind that we are not trying here to estimate educational cost functions. This is a task well beyond the scope of this paper. We would like to obtain, in particular, "unbiased" estimates of the effects on expenditure of block grants. To do this we need to control for possible differences among districts in the costs--or at least costs as

reflected in "standard" expenditure practice--of education due to differences in student characteristics. The demographic variables should be thought of as controlling for possible differences. No attempt is made to explain why such differences might exist. That is another paper. No evidence on that question is presented here.

Finally, to account for likely differences between the costs of elementary and secondary education, we have included, where appropriate, a variable measuring the proportion of elementary students in each district.

Summary statistics relating to these variables are presented in Table 3 by district type. The variable sources and how they were combined is described in an Appendix.

Note that we have not controlled for differences among districts in the costs of inputs (or their quality). One can imagine, for example, that teacher salaries (and teacher quality) are likely to vary considerably among districts. Such differences are likely to lead to differences in expenditures per ADA.

B. Empirical Results

Least squares parameter estimates by district type and by expenditure category are presented in Table 3. Expenditure categories are total, instructional, and other expenditures. Instructional expenditure averages about 72 percent of total expenditures across all districts. It includes salaries of teachers, principals, and supervisors as well as text books, and expenses directly related to instruction. We experimented with instructional expenditure excluding salaries of principals and supervisors. The results were not appreciably altered by the change in definition and have not been reported here. Other expenditures include health services, operation and maintenance of plant and equipment, transportation, food services, and a few other expenses. The estimates for total, instructional, and other expenditures

Table 2. Summary Statistics, by District Type.[1]

Variable	All Districts Mean	All Districts S.D.	Unified Districts Mean	Unified Districts S.D.	Elementary Districts Mean	Elementary Districts S.D.	Secondary Districts Mean	Secondary Districts S.D.
Total Expenditure per ADA	870	223	937	214	766	173	1102	160
Instructional Expenditure per ADA	628	154	674	140	556	125	789	114
Other Expenditure per ADA	242	83	262	80	210	65	313	65
Property Value per ADA	38159	61892	67062	44391	78618	53629	167520	60461
Median Family Income	9902	2826	10094	2623	9920	3067	9426	2231
Title I Grants per ADA	25.5	19.6	23.16	15.88	27.7	21.9	22.6	16.6
Other Federal Block Grants per ADA	48.1	69.2	52.1	73.6	47.0	59.5	43.8	88.3
State Block Grants per ADA	321.0	109.46	332.5	104.8	310.4	93.7	334.3	157.1
Proportion Non-public Students	.049	.042	.056	.046	.047	.042	.041	.029
Students per Family	.985	.201	.949	.216	1.005	.197	.993	.162
Proportion AFDC Students	.144	.114	.130	.092	.157	.128	.127	.095
Proportion from Female-Headed Households	.113	.043	.116	.047	.112	.044	.114	.029
Proportion Poor Children	.142	.088	.129	.072	.145	.096	.155	.086
Proportion Black Students	.032	.082	.039	.087	.029	.086	.026	.047
Proportion with Spanish Surnames	.166	.175	.155	.156	.176	.190	.158	.152
Proportion Elementary Students	.754	.344	.696	.038	1.0	0	0	0

1. Revenue and expenditure figures come from the California State Controller's Office and were provided to us by the Childhood and Government Project at the University of California, Berkeley. Property value and ADA variables were obtained from the same source. Title I allocations and the number of AFDC students were obtained from California State Department of Education, Title I Office. The other variables were obtained from the 1970 Census Fourth Count.

Table 3. Expenditure Function Parameter Estimates *

Variable	All Districts		
	Total Expenditure	Instructional Expenditure	Other Expenditure
Property Value Per ADA:			
Unified 1	.00454	.00224	.00229
	(.00034)	(.00025)	(.00014)
Unified 2	.00304	.00201	.00103
	(.00030)	(.00022)	(.00013)
Elementary 1	.00194	.00089	.00105
	(.00025)	(.00018)	(.00011)
Elementary 2	.00186	.00102	.00085
	(.00016)	(.00012)	(.00007)
Secondary 1	.00352	.00162	.00189
	(.00069)	(.00051)	(.00029)
Secondary 2	.00191	.00118	.00073
	(.00019)	(.00014)	(.00008)
Median Family Income 1	.02969	.02765	.00204
	(.00473)	(.00346)	(.00201)
Median Family Income 2	.02110	.01624	.00486
	(.00346)	(.00253)	(.00147)
Federal Block Grants	.67227	.43778	.23449
	(.05978)	(.04378)	(.02537)
State Block Grants	.15645	.08168	.07477
	(.04729)	(.03464)	(.02007)
Proportion Non-Public Students	24.702	114.39	- 89.686
	(131.20)	(96.08)	(55.680)
Proportion Adults with College Degrees	250.08	249.93	.15551
	(91.12)	(66.73)	(38.670)
Proportion Elementary Students	- 14.870	- 69.462	54.590
	(72.700)	(53.240)	(30.850)
Proportion AFDC Students	220.76	115.89	104.86
	(61.52)	(45.05)	(26.11)
Proportion from Female-Headed Households	268.30	420.49	- 152.18
	(126.90)	(92.94)	(53.86)
Average Number Children/Family	- 66.521	- 58.639	- 7.8814
	(28.140)	(20.610)	(11.940)
Proportion Black Students	357.74	204.75	152.98
	(64.84)	(47.49)	(27.52)
Proportion Students with Spanish Surname	100.50	117.32	- 16.820
	(30.96)	(22.67)	(13.140)
Constant	216.4	184.8	31.67
R^2	.7956	.7708	.7314
Sum of Squared Residuals	.7098E 07	.3806E 07	.1278E 07
Number of Districts	699	699	699

* Standard errors are in parentheses.

Table 3. Expenditure Function Parameter Estimates, Continued *

Variable	Unified Districts		
	Total Expenditure	Instructional Expenditure	Other Expenditure
Property Value Per ADA:			
Unified 1	.00506	.00253	.00252
	(.00045)	(.00033)	(.00019)
Unified 2	.00268	.00172	.00097
	(.00033)	(.00024)	(.00014)
Elementary 1	---	---	---
	---	---	---
Elementary 2	---	---	---
	---	---	---
Secondary 1	---	---	---
	---	---	---
Secondary 2	---	---	---
	---	---	---
Median Family Income 1	.02749	.02400	.00348
	(.00872)	(.00633)	(.00371)
Median Family Income 2	.01026	.00807	.00219
	(.00586)	(.00426)	(.00250)
Federal Block Grants	.73623	.46783	.26840
	(.09966)	(.07238)	(.04243)
State Block Grants	.38870	.18588	.20283
	(.09213)	(.06690)	(.03922)
Proportion Non-Public Students	- 425.65	- 287.63	- 138.02
	(210.00)	(152.50)	(89.41)
Proportion Adults with College Degrees	285.32	279.47	5.8578
	(138.90)	(100.90)	(59.140)
Proportion Elementary Students	- 1000.3	- 781.92	- 218.42
	(227.8)	(165.40)	(96.98)
Proportion AFDC Students	290.29	117.72	172.57
	(136.80)	(99.32)	(58.22)
Proportion from Female-Headed Households	212.65	439.75	- 227.10
	(248.10)	(180.20)	(105.60)
Average Number Children/Family	6.2826	9.0286	- 2.7459
	(54.880)	(39.850)	(23.360)
Proportion Black Students	561.00	387.63	173.37
	(121.40)	(88.15)	(51.68)
Proportion Students with Spanish Surname	105.25	131.63	- 26.386
	(67.87)	(49.28)	(28.890)
Constant	765.5	613.8	151.7
R^2	.7907	.7413	.7770
Sum of Squared Residuals	.2143E 07	.1130E 07	.3885E 06
Number of Districts	223	223	223

* Standard errors are in parentheses.

Table 3. Expenditure Function Parameter Estimates, Continued *

Variable	Elementary Districts		
	Total Expenditure	Instructional Expenditure	Other Expenditure
Property Value Per ADA:			
Unified 1	---	---	---
	---	---	---
Unified 2	---	---	---
	---	---	---
Elementary 1	.00206	.00103	.00104
	(.00029)	(.00021)	(.00013)
Elementary 2	.00184	.00099	.00085
	(.00015)	(.00011)	(.00007)
Secondary 1	---	---	---
	---	---	---
Secondary 2	---	---	---
	---	---	---
Median Family Income 1	.02530	.02343	.00187
	(.00605)	(.00439)	(.00268)
Median Family Income 2	.02600	.02005	.00595
	(.00434)	(.00315)	(.00192)
Federal Block Grants	.77785	.55984	.21801
	(.09189)	(.06666)	(.04063)
State Block Grants	.24256	.16478	.07778
	(.06885)	(.04995)	(.03044)
Proportion Non-Public Students	148.56	277.90	- 129.33
	(172.30)	(125.00)	(76.19)
Proportion Adults with College Degrees	223.07	210.26	12.804
	(123.90)	(89.90)	(54.800)
Proportion Elementary Students	---	---	---
	---	---	---
Proportion AFDC Students	194.38	110.04	84.336
	(71.21)	(51.66)	(31.490)
Proportion from Female-Headed Households	404.76	501.20	- 96.441
	(151.60)	(110.00)	(67.040)
Average Number Children/Family	- 73.891	- 66.716	- 7.1747
	(35.380)	(25.670)	(15.640)
Proportion Black Students	260.40	125.27	135.13
	(78.49)	(56.94)	(34.71)
Proportion Students with Spanish Surname	97.066	104.18	- 7.1174
	(36.400)	(26.40)	(16.090)
Constant	193.4	111.1	82.33
R^2	.7004	.6949	.5834
Sum of Squared Residuals	.3353E 07	.1765E 07	.6556E 06
Number of Districts	372	372	372

* Standard errors are in parentheses.

Table 3. Expenditure Function Parameter Estimates, Continued *

Variable	Secondary Districts		
	Total Expenditure	Instructional Expenditure	Other Expenditure
Property Value Per ADA:			
Unified 1	---	---	---
	---	---	---
Unified 2	---	---	---
	---	---	---
Elementary 1	---	---	---
	---	---	---
Elementary 2	---	---	---
	---	---	---
Secondary 1	.00144	.00030	.00113
	(.00183)	(.00139)	(.00073)
Secondary 2	.00147	.00102	.00046
	(.00023)	(.00017)	(.00009)
Median Family Income 1	.02846	.03586	- .00740
	(.01500)	(.01138)	(.00595)
Median Family Income 2	.01453	.00952	.00501
	(.01693)	(.01284)	(.00671)
Federal Block Grants	.78758	.39082	.39677
	(.15770)	(.11960)	(.06253)
State Block Grants	- .22117	- .07205	- .14912
	(.12670)	(.09608)	(.05023)
Proportion Non-Public Students	627.69	560.85	66.841
	(515.70)	(391.20)	(204.50)
Proportion Adults with College Degrees	197.13	267.96	- 70.829
	(356.10)	(270.10)	(141.20)
Proportion Elementary Students	---	---	---
	---	---	---
Proportion AFDC Students	415.89	324.43	91.459
	(209.30)	(158.80)	(83.000)
Proportion from Female-Headed Households	- 591.12	- 219.64	- 371.48
	(495.60)	(375.90)	(196.50)
Average Number Children/Family	- 157.65	- 130.15	- 27.500
	(90.62)	(68.74)	(35.930)
Proportion Black Students	319.22	113.90	205.32
	(276.20)	(209.50)	(109.50)
Proportion Students with Spanish Surname	86.335	110.69	- 24.352
	(104.50)	(79.22)	(41.410)
Constant	731.4	411.6	319.7
R^2	.6710	.6301	.6844
Sum of Squared Residuals	.8726E 06	.5020E 06	.1372E 06
Number of Districts	104	104	104

* Standard errors are in parentheses.

are not independent, of course; but for convenience, all three have been presented.

The estimates for unified districts and elementary districts should be considered the most reliable. Between these two, the greatest weight should in general be given to unified districts. And for comparison with results for other states (e.g., Massachusetts), the results for unified districts should be used. About 63 percent of the students in the state are in unified districts, and 21 percent in elementary districts. Estimates for all districts combined may be used to get a rough idea of "average" effects, although the functional forms used do not constrain these estimates to be averages of the other three. (The reader will note that in some cases estimates for all districts are slightly above or below those for each of the districts separately.) The results for secondary districts are included primarily for completeness. Secondary districts, as well as elementary districts, tend to be small, rural districts, although they may be large in area. The "behavior" of these districts is likely to be different from larger, urban, unified districts. In addition, data pertaining to them is likely to be less reliable than for the other distircts,[1] and the effect of errors in measurement on the estimates tends to be magnified when the actual numbers are small.

Capital outlay and debt service are excluded from the analysis. Capital expenditures are likely to fluctuate widely over time. Thus, it is probably inappropriate to analyze them with cross-section data for one time period. However, results for more detailed expenditure categories, including capital expenditure, are available upon request. Information on the "market value"

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1. Although we have no accurate indicator of the extent of errors, there seems to have been some difficulty in matching Census data to school district boundaries.

of plant and equipment is not available. One might suspect that wealthy districts would devote a larger proportion of expenditures to "non-instructional" equipment such as tennis courts or swimming pools. We have no information on the value of these kinds of expenditures.

Parameter estimates generally are in accord with a priori expectations as to sign, and their magnitudes seem to be reasonable. They are also measured with considerable precision. The most reliable estimates are for unified and elementary districts. These districts also contain most of the students in California. For purposes of comparison with results for other states (e.g., Massachusetts), the estimates for unified districts should be the most useful. The estimates based on all districts together can be thought of as representing averages across district types.

The marginal effects on expenditure in unified districts of both property value and income appear to decline with increases in their magnitudes. That is, the coefficient above the breakpoint in the specification of these variables is smaller than the one below. The marginal effect of an increase of one dollar in property value per ADA is .0051 below and .0027 above 100,000 dollars. The estimated effect of median family income is .027 below and .010 above 10,000 dollars. (See pages 10-12.) The estimated difference between the upper and lower coefficients for elementary and secondary districts is much smaller. In fact, except for the income coefficients in secondary districts, the estimated coefficients above the breakpoint are about the same as those below.[1] We also note that the property value coefficients for unified districts on the one hand and elementary and secondary on the other are reasonably compatible.

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1. Formal tests of differences between the upper and lower coefficients were not carried out, but for elementary and secondary districts the differences appear not to be statistically significant. The estimates are affected, of course, by the choice of breakpoint. In addition, differences by district type may reflect, in part, differences among districts in the range of property wealth and income values represented in the samples.

That is, the sums of the elementary and secondary coefficients approximate those for unified districts.

We can compare the relative effects of income and property value by considering the elasticity of expenditure with respect to each of them. Elasticities have been evaluated at the breakpoint for property value and median family income (100 and 10 thousand dollars, respectively) and the mean of expenditure for each type of district. One estimate uses the coefficient below the breakpoint and the other the coefficient above. The results are shown in the tabulation below. The elasticities with respect to income are roughly of the same order of magnitude in all district types.

	Unified Districts		Elementary Districts		Secondary Districts	
	Below (1)	Above (2)	Below (1)	Above (2)	Below (1)	Above (2)
Property Value Per ADA	.54	.29	.27	.24	.13	.13
Median Family Income	.29	.11	.33	.34	.26	.13

The property value elasticities, however, are higher in unified than in elementary or secondary districts. We expect this to be the case, as mentioned above, because property value per ADA does not have the same meaning in all districts. If there are two students in a unified district, one elementary and one secondary, and property value is 1000, then property value per ADA is 500. But if this district is divided into separate elementary and secondary districts, the property value per student would be calculated as 1000 in "each" district. We might expect expenditure per ADA to be the same in both districts. But that would imply "coefficients" on property value in the elementary and secondary districts only half as large as in the unified

districts. Thus, we expect coefficients on property value in elementary and secondary districts that are considerably smaller than in comparable unified districts. Elasticities have been calculated for each district type at the mean level of expenditure for that type; but the property value used is the same for all types--the breakpoint in the piecewise specification. Thus, the differences in coefficients determine in large part the differences in the elasticities.[1] Because elementary and secondary boundaries do not coincide, there is no way to circumvent this problem, while retaining the wealth per ADA variable.

Estimates (and standard errors) reflecting the effect of block grants on total expenditures are reproduced in the tabulation below. Except for the coefficient on State grants in secondary districts, they are all significantly

	All Districts	Unified Districts	Elementary Districts	Secondary Districts
Federal Block Grants	.67 (.06)	.74 (.10)	.78 (.09)	.79 (.16)
State Block Grants	.16 (.05)	.39 (.09)	.24 (.07)	-.22 (.13)

different from zero by standard criteria. The effect on expenditure of Federal grants is considerably larger than that of State grants. For each dollar of Federal revenue per student, district expenditures are increased by approximately 70 or 80 cents. A dollar of State revenue leads to increases of expenditures between 25 and 40 cents, according to our estimates (ignoring secondary districts.) We have no good explanation for the negative coefficient on State

1. This "artificial" effect is not overcome simply by using mean property values per ADA by district type in calculating elasticities. Actual property values tend to be lower in elementary and secondary than in unified districts. They are rural areas in general. Elasticities calculated at mean expenditure and property value levels are .36 in unified, .21 in elementary, and .22 in secondary districts. Of course, it is also possible that the behavior of unified districts differs from that of the generally smaller and more rural elementary and secondary districts.

grants for secondary districts.[1]

It is possible that there is an interaction between district wealth and the expenditure effect of block grants. For example, the effect on expenditure of a dollar in federal funds may be higher in low than in high wealth districts, or vice-versa. Theoretical considerations do not preclude either result. To allow for a possible interaction, we have "divided" both the federal and the state block grant variables into two separate variables, defined by wealth. Separate coefficients were obtained for each. This was done for all districts together and unified districts only. The specification was the same as that used to obtain the results in Table 1, except for the division of the block grant variables.

Three different splits (specifications) of these variables were tried. The first divided the sample according to median family income. A dividing point of 10,000 was chosen. That is, if F represents federal block grants, then two variables were defined:

$$F_1 = \begin{cases} F, & \text{if median family income} \geq 10{,}000 \\ 0, & \text{if median family income} < 10{,}000 \end{cases},$$

and

$$F_2 = \begin{cases} 0, & \text{if median family income} \geq 10{,}000 \\ F, & \text{if median family income} < 10{,}000 \end{cases}$$

---

1. Apparently we have failed to take account of some district characteristics that are correlated with the amount of State aid, and that have a negative effect on expenditure. It should also be noted that the results below suggest that the effect of State aid is smaller in low property value than in high property value districts. In addition, property value and State aid are likely to be more highly correlated in these districts than in others because not many secondary districts are receiving the minimum $121 per student. Thus, it may be more difficult to separate the effect of State aid from that of property value. This may be especially difficult with the small number of secondary districts. Finally, the likelihood that the data for secondary districts is less reliable than for other districts has already been mentioned. The effect of aid is also likely to depend on the particular categories of aid that are received. The distribution of State aid by category may differ by district type.

Analogous variables were defined for State grants. The second divided the sample by property value per ADA. The sample was divided at 75,000 per ADA. The third distinguished between low family income and low property value districts, and all other districts. The same dividing points were used.[1]

The resulting coefficients on block grants are shown in Table 2, together with the average grant per ADA in each group. We note first that, judging by these estimates, the effect of block grants does not vary substantially with median family income.

The effect on expenditure of block grants does seem to vary with property value. In particular, the marginal effect of State aid on expenditure, in unified districts, at least, appears much larger in high than in low property value districts. It is important to keep in mind, however, that high property value districts all receive approximately the same amount of state "equalization" aid, the $125 minimum per student. The rest is in non-equalization aid. Thus, the mix of state aid by type may vary substantially by district property value per ADA. And, the effect on expenditure of State aid is likely to vary by type.

The effect of federal aid in unified districts, on the other hand, appears somewhat larger in low property value districts. Again, this may result in part from variation in the mix of aid types by property value. For all districts together, no substantial difference is found.

Districts with low income and property value seem not to differ greatly from other districts, although in unified districts the effect of federal block grants is estimated to be higher than in other districts, .85 versus

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1/ We also divided both the State and Federal aid variables into four categories defined by income and property value. The results are not reported here. They do not substantially alter the conclusions based on those that are shown below.

.63. When all districts are considered together, the relative relationship is reversed, .61 versus .71. Again, it is difficult to distinguish the effect of property value and income on the use of block grants from the effects of the mix of aid by type. This could only be done by analyzing each type separately. But the finer the categories of aid considered, the more difficult it becomes to distinguish their effects from the effects of district demographic characteristics. Therefore, in the first instance, at least, and this study should be considered a first instance, the predicted effects of state and block grants should be based on the estimates that do not distinguish districts by income and property value. Reliable estimates of the relationship between the effects of block grants on expenditures, on the one hand, and property value and income, on the other, can only be obtained if detailed categories of Federal and State grants are distinguished. Such estimates will have to await further analysis.

The proportion of students from AFDC families substantially increases expenditure. The estimated coefficients are 221 for all districts, 290 for unified, 194 for elementary, and 416 for secondary districts. Recall that the coefficients represent the estimated additional expenditure associated with an AFDC student, after controlling for other variables in the regression. Title I allocation per AFDC student is $176. We might assume that even after controlling for other socioeconomic variables, the background of students, captured by the proportion of AFDC students, would be associated with higher costs of education. If this were true, expenditure per student would increase with the proportion of AFDC students, even if no Title I revenue were received for each AFDC student. It might seem reasonable to suppose that this part of the effect of AFDC students on expenditure in unified districts, for example, is at least $45--the difference between the coefficient on AFDC, $221, and $176. Similar

Table 4. Estimated Effects of Block Grants by District Income and Property Value.

Category *	Coefficient (Standard Error)		Average Grant Per ADA		Number of Districts
	Federal Block Grant	State Block Grant	Federal	State	
All Districts					
Income ≤ 10,000	.65 (.07)	.13 (.04)	65.63	325.03	432
Income > 10,000	.64 (.16)	.13 (.04)	37.40	342.15	267
Property ≤ 75,000	.64 (.08)	.09 (.04)	62.14	376.86	385
Property > 75,000	.66 (.09)	.18 (.05)	42.59	278.07	314
Income ≤ 10,000 and Property ≤ 75,000	.61 (.09)	.18 (.05)	68.17	358.50	206
Income > 10,000, or Property > 75,000 or Both	.71 (.09)	.15 (.05)	44.73	317.35	493
Unified Districts					
Income ≤ 10,000	.74 (.12)	.33 (.09)	55.05	320.84	126
Income > 10,000	.68 (.19)	.35 (.09)	29.31	321.21	97
Property ≤ 75,000	.83 (.13)	.21 (.10)	51.65	363.36	156
Property > 75,000	.50 (.15)	.51 (.11)	57.29	260.58	67
Income ≤ 10,000 and Property ≤ 75,000	.85 (.14)	.36 (.10)	67.24	352.98	82
Income > 10,000, or Property > 75,000, or Both	.63 (.14)	.41 (.09)	36.01	307.61	131

* "Income" is median family income and "Property" is property value per ADA.

arguments could be made with respect to the other district types, although the magnitudes involved are different.

The proportion of students who are black and the proportion with Spanish surnames are also associated with increased expenditures. Students from female-headed households are associated with increased expenditure in all but secondary districts, although the coefficients are not measured with much precision. The lack of precision may result from the rather high--but by no means perfect--correlation between AFDC students and students from female-headed households.

It is not surprising that expenditures are estimated to vary substantially by student socioeconomic background. McLure and Pence,[1] for example, found that expenditure per pupil varied greatly--by a factor of 2 or 3--according to educational program. Their programs included "basic," "socially maladjusted," and "remedial and compensatory." It is undoubtedly the case that the distribution of students in our sample among programs comparable to these would be highly related to the demographic variables we have isolated. Again, it should be emphasized that these variables are intended to serve only as proxies for district characteristics that might be associated with differences in the "costs" of education. No attempt is made here to explain why such costs differences might exist. That would involve a study of educational cost functions.

To test for the possible effect of attributes of urban areas not captured by the socioeconomic variables, we entered various district size variables into the specification. None were quantitatively important. In addition, the inclusion of the size variables did not substantially alter the coefficients

1. See William P. McLure and Audra M. Pence, "Early Childhood and Basic Elementary and Secondary Education," in Roe Johns and others, Planning to Finance Education, (Gainesville, Florida; National Educational Finance Project, 1971), p. 26.

on the socioeconomic variables. District size was used because it was the only indicator of urbanization readily available. Estimates using size were obtained for all districts together and for unified districts. In one specification the logarithm of ADA was used. In another a dummy variable with a value of one for districts with ADA greater than 25,000 was added. The estimated coefficients, and standard errors, on the logarithm of size were 11.71 (4.75) and -3.10 (8.80) in all districts and in unified districts, respectively. The estimates and standard errors on the dummy variable were -0.78 (23.2) and -5.94 (25.1) in all and in unified districts, respectively. (The estimates for all districts together may, of course, capture effects of district type because most urban districts are unified.)

The number of students per family has a negative net effect on expenditures per ADA in all but unified districts. But it is not significantly different from zero in elementary and secondary districts, or for all districts together. The proportion of elementary students is negatively related to expenditures. The effect of student mix alone is probably more accurately reflected in the coefficients for unified districts than in the coefficient for all districts together. When all districts are combined, the effect of student mix is likely to be confounded with other differences among district types. In addition, student mix may be confounded with the effect of property value. That is, differences in expenditure by district type can be reflected in the coefficient on mix as well as the coefficients on property value.

Finally, we will discuss briefly the relationship between total expenditures and their distribution among instruction and other expenditures, and the effect of wealth and block grants on this distribution. The relationship between total expenditure and the proportion going to instruction related costs is summarized in the following estimates, resulting from a regression of this

proportion on expenditures per ADA. It can be seen that although there is

District Type	Constant	Coefficient on Expenditure per ADA	
All Districts	.76 (.01)	- .46E-04 (.07E-04)	R^2 = .06
Unified Districts	.80 (.01)	- .80E-04 (.02E-04)	R^2 = .17
Elementary Districts	.75 (.01)	- .32E-04 (.13E-04)	R^2 = .02
Secondary Districts	.75 (.02)	- .34E-04 (.21E-04)	R^2 = .03

considerable variation in district practice for any given expenditure per ADA (the R^2 values are quite low), on the average the proportion going to instruction declines with total expenditure. In unified districts, for example, these estimates indicate that an increase in expenditure per ADA of $2000--about the range in our data--would reduce on average the proportion going to instruction by about 16 percent.[1]

The association between the size of wealth and block grants, on the one hand, and the proportion of expenditure going to instruction, on the other, varies somewhat by district type. We will draw attention only to general findings for all districts together and for unified districts. (See Table 3.) The marginal effect of property value on instruction expenditure does not seem to vary much over the range of property values that we observe. But the marginal effect on other expenditure below the mean of property value is more than twice as large as above the mean. The marginal effect of family income is higher below than above its mean for both instructional and other expenditure, with the decline relative to instructional expenditure the larger.

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1. We might expect some decline if we assume that there are some returns to scale in such things as maintenance and operating expenditure. We might expect greater returns to scale in the cost of plant and equipment, but these items are excluded from our analysis.

About two-thirds of Federal revenues are allocated to instructional expenditures, with one-third to other expenditures. State revenues are approximately evenly divided between the two types of expenditure.

Estimates comparable to those in Table 3, but with the ethnic variables excluded, are presented in an Appendix Table. The estimated coefficients on property value, income, and block grants are not substantially different from those in Table 3. The coefficient on AFDC students, however, is considerably larger than in Table 3.

IV. The Effect of Title I Funds

As explained above, we were unable to isolate the effect of Title I allocations on district expenditures. We could not distinguish the effect of Title I revenues from the effect of demographic characteristics of students associated with AFDC students. We did, however, make an indirect argument based on the estimated effect on expenditure associated with AFDC students. These estimates seemed consistent with an expenditure effect of a dollar of Title I revenue of something less than one dollar.

In addition to these indirect arguments, we made an attempt to estimate directly the effect of Title I funds for unified districts, or at least to put an upper bound on the effect. Although we were largely unsuccessful, the results are of some interest. The approach we followed was to add a separate variable indicating Title I revenues per student and to eliminate the AFDC variable. Then we added as many socioeconomic variables as we had measures for. The idea was to account for as much as possible of the effect of student demographic variables on expenditure that would otherwise be picked up by the AFDC variable. Using Title I revenue without the demographic variables led to a coefficient on Title I funds of about 3, for unified districts, well above the logical maximum of 1. Adding the demographic variables reduced the coefficient to about 1.3 for unified districts. Although this number is still not reasonable, we can see that controlling for demographic variables has the expected effect. But apparently we were unable to capture all relevant student characteristics.

Lacking further evidence, it would seem reasonable to guess that the effect of Title I revenues on expenditure is not substantially different from the effect of other Federal revenues. If it is assumed that the effects are

the same and Title I funds are added to other Federal funds, the estimated effects of AFDC students are 112, 174, 68, and 290 for all districts, unified, elementary, and secondary districts, respectively.

V. Summary

Wealth in the form of property value and income has a substantial effect on expenditure, with elasticities on the order of .3 to .5 for unified districts. For elementary and secondary districts, the elasticities are somewhat lower.

The estimated effect of Federal block grants on expenditure is about 70 or 80 cents per dollar of revenue. The estimated effect of State grants is much lower; 24 cents in elementary districts, and 39 cents in unified districts. We had no good explanation for the negative estimated effect for secondary districts. The larger values for Federal than for State grants should be expected. The bulk of State revenue is in the form of completely fungible equalization aid. Therefore, it is not surprising that much of it is substituted for local revenue. On the other hand, most of Federal aid is given under particular legislative programs, like the Vocational Education Act, the Manpower Development and Training Act, and Head Start.

In addition, the amount of State aid is probably viewed by districts as being considerably more certain than Federal aid. Thus, it seems much more likely that State aid will be substituted for local revenue, particularly over time. One might expect more substitution of Federal funds for local revenue, if Federal aid were to become a permanent component of district revenue of precise and foreseeable magnitude.

We were unable to obtain direct estimates of the impact of Title I revenue on expenditure. Although, based on the limited evidence available, it would seem reasonable to assume that the effect is no greater than that of other Federal revenue.

Appendix: Construction of Data Base and Sources of Variables

The California data file used in this study is one of the most comprehensive elementary and secondary school data bases that has been assembled. Construction of an accurate, validated, and manipulable data base involved undertaking several major and costly data processing operations.

Four main sources were drawn upon. First and fourth count census tapes for 1970, arranged by school districts, were used as the primary source for demographic variables. California State Controller's tapes for 1971-72 were the source of revenue and expenditure data. Over 250 separate items from seven different funds are included. Data on AFDC students and Title I allocations were obtained directly from the California State Department of Education, Title I Office. The data base also contains local tax rate information obtained from a "Tax Rate" tape for 1971-72 assembled by the California State Department of Education. This information was not used, however, in the above analysis. Both the Controller's and the Tax Rate information were provided to us by the Childhood and Government Project, University of California, Berkeley. Finally, the data base contains a large amount (over 100 variables) of test score data obtained from the California State Testing Program (CSTP). Test scores for five grades and several subjects for 1970-71 through 1973-74 are included. This information was not used in the above analysis, but was used in the companion paper on "The Prediction of Test Scores: California."

California contains approximately 1050 school districts. Many of these (nearly 300) contain fewer than 300 students. Consequently, there has been movement in recent years towards district consolidation. As a result, each data source contained a different set of school district names and varying numbers of districts. The ordering of districts also differed among data bases. This inconsistency across sources required that we undertake a complex

sorting and matching procedure--matching common names across data sets and checking by hand on missing or consolidated districts. The CSTP data contained 1055 districts; the Controller's information, 1069; the Tax Rate tape, 1066. A consolidation of the sources left a data base with 1034 districts.

Census data excludes districts with ADA below 300. It was, therefore, necessary to create a second "matched" data file containing 716 districts. This is the file used in most of the empirical work above. These districts contain over 95 percent of students enrolled in California public schools.

The data also contained many miscoded items. Over 200 variables of the approximately 3000 contained on the tapes that we used were given special scrutiny for outliers or unreasonable values. This procedure, although time-consuming, was essential to insure accuracy. It resulted in the elimination from the analysis of several more districts.

In some instances different data bases contained competing values of the same item. This occurred in the case of variables such as ADA, the number of pupils, ethnicity, population, and children from low-income households. Discrepancies were not insignificant in some instances. In general, we opted for census demographic variables and State sources for school-specific variables (e.g., ADA).

The final product is a valid and manipulable data base for California school districts containing a wide range of variables on revenue and expenditure flows, pupil characteristics, achievement levels, and district demographic characteristics.

The sources of data used in this report are summarized below:

Data	Source
1. School district revenue and expenditure.	California State Controller.
2. Assessed property value, ethnic variables, and ADA.	Tax Rate Tape.
3. Title I allocations and AFDC children.	Special listing from the California State Department of Education, Title I Office.
4. Additional demographic variables.	U.S. Census School District Data Tapes, 1970 (First and Fourth Count).

Appendix Table.
Expenditure Function Parameter Estimates,
Excluding Ethnic Variables *

Variable	All Districts		
	Total Expenditure	Instructional Expenditure	Other Expenditure
Property Value Per ADA:			
Unified 1	.00457	.00229	.00227
	(.00035)	(.00025)	(.00015)
Unified 2	.00330	.00216	.00115
	(.00030)	(.00022)	(.00013)
Elementary 1	.00203	.00101	.00102
	(.00025)	(.00019)	(.00011)
Elementary 2	.00195	.00106	.00089
	(.00016)	(.00012)	(.00007)
Secondary 1	.00329	.00143	.00186
	(.00071)	(.00052)	(.00030)
Secondary 2	.00197	.00122	.00075
	(.00019)	(.00014)	(.00008)
Median Family Income 1	.03028	.02666	.00362
	(.00478)	(.00350)	(.00204)
Median Family Income 2	.01902	.01434	.00468
	(.00351)	(.00257)	(.00149)
Federal Block Grants	.73960	.46990	.26970
	(.05954)	(.04367)	(.02537)
State Block Grants	.14906	.07422	.07484
	(.04835)	(.03546)	(.02060)
Proportion Non-Public Students	138.36	235.15	- 96.798
	(130.70)	(95.82)	(55.670)
Proportion Adults with College Degrees	299.80	264.00	35.804
	(92.20)	(67.62)	(39.280)
Proportion Elementary Students	- 41.442	- 94.156	52.711
	(74.140)	(54.380)	(31.590)
Proportion AFDC Students	385.53	242.49	143.04
	(55.29)	(40.55)	(23.56)
Proportion from Female-Headed Households	494.36	534.80	- 40.447
	(121.70)	(89.29)	(51.87)
Average Number Children/Family	- 9.6627	- 3.8406	- 5.8221
	(25.560)	(18.750)	(10.890)
Constant	141.8	145.0	- 3.151
R^2	.7855	.7587	.7158
Sum of Squared Residuals	.7449E 07	.4007E 07	.1352E 07
Number of Districts	699	699	699

* Standard errors are in parentheses.

Appendix Table.
Expenditure Function Parameter Estimates,
Excluding Ethnic Variables *

Variable	Unified Districts		
	Total Expenditure	Instructional Expenditure	Other Expenditure
Property Value Per ADA:			
Unified 1	.00498	.00246	.00252
	(.00047)	(.00034)	(.00020)
Unified 2	.00309	.00199	.00110
	(.00033)	(.00024)	(.00014)
Elementary 1	---	---	---
	---	---	---
Elementary 2	---	---	---
	---	---	---
Secondary 1	---	---	---
	---	---	---
Secondary 2	---	---	---
	---	---	---
Median Family Income 1	.03426	.02739	.00687
	(.00886)	(.00643)	(.00373)
Median Family Income 2	.00776	.00599	.00178
	(.00609)	(.00442)	(.00256)
Federal Block Grants	.82342	.50988	.31354
	(.10010)	(.07266)	(.04210)
State Block Grants	.36878	.15732	.21146
	(.09470)	(.06872)	(.03982)
Proportion Non-Public Students	- 285.68	- 169.32	- 116.35
	(215.80)	(156.60)	(90.76)
Proportion Adults with College Degrees	378.27	338.44	39.831
	(143.50)	(104.20)	(60.350)
Proportion Elementary Students	- 989.29	- 762.73	- 226.56
	(237.70)	(172.50)	(99.96)
Proportion AFDC Students	573.33	358.23	215.11
	(117.40)	(85.18)	(49.36)
Proportion from Female-Headed Households	611.91	713.53	- 101.61
	(243.10)	(176.40)	(102.20)
Average Number Children/Family	61.234	66.170	- 4.9363
	(51.610)	(37.450)	(21.700)
Constant	586.0	486.0	99.98
R^2	.7692	.7151	.7601
Sum of Squared Residuals	.2363E 07	.1245E 07	.4179E 06
Number of Districts	223	223	223

* Standard errors are in parentheses.

Appendix Table.
Expenditure Function Parameter Estimates,
Excluding Ethnic Variables *

Variable	Elementary Districts		
	Total Expenditure	Instructional Expenditure	Other Expenditure
Property Value Per ADA:			
Unified 1	---	---	---
	---	---	---
Unified 2	---	---	---
	---	---	---
Elementary 1	.00226	.00122	.00104
	(.00028)	(.00021)	(.00013)
Elementary 2	.00189	.00101	.00089
	(.00015)	(.00011)	(.00007)
Secondary 1	---	---	---
	---	---	---
Secondary 2	---	---	---
	---	---	---
Median Family Income 1	.02422	.02150	.00273
	(.00609)	(.00443)	(.00270)
Median Family Income 2	.02425	.01861	.00564
	(.00439)	(.00319)	(.00195)
Federal Block Grants	.86590	.60628	.25962
	(.08983)	(.06539)	(.03990)
State Block Grants	.26128	.18109	.08019
	(.06980)	(.05081)	(.03100)
Proportion Non-Public Students	233.10	383.30	- 150.20
	(170.60)	(124.20)	(75.76)
Proportion Adults with College Degrees	256.83	204.47	52.361
	(124.00)	(90.28)	(55.090)
Proportion Elementary Students	---	---	---
	---	---	---
Proportion AFDC Students	316.67	196.70	119.97
	(64.69)	(46.95)	(28.65)
Proportion from Female-Headed Households	540.63	543.49	- 2.8597
	(145.30)	(105.80)	(64.560)
Average Number Children/Family	- 19.223	- 19.365	- .14203
	(32.130)	(23.390)	(14.270)
Constant	109.3	61.38	47.95
R^2	.6885	.6805	.5628
Sum of Squared Residuals	.3487E 07	.1848E 07	.6880E 06
Number of Districts	372	372	372

* Standard errors are in parentheses.

Appendix Table.
Expenditure Function Parameter Estimates,
Excluding Ethnic Variables *

Variable	Secondary Districts		
	Total Expenditure	Instructional Expenditure	Other Expenditure
Property Value Per ADA:			
Unified 1	---	---	---
	---	---	---
Unified 2	---	---	---
	---	---	---
Elementary 1	---	---	---
	---	---	---
Elementary 2	---	---	---
	---	---	---
Secondary 1	.00153	.00057	.00096
	(.00180)	(.00137)	(.00072)
Secondary 2	.00151	.00105	.00047
	(.00022)	(.00017)	(.00009)
Median Family Income 1	.02614	.03360	- .00745
	(.01483)	(.01127)	(.00597)
Median Family Income 2	.01638	.00746	.00892
	(.01617)	(.01229)	(.00651)
Federal Block Grants	.81814	.39397	.42417
	(.15390)	(.11690)	(.06192)
State Block Grants	- .22139	- .06904	- .15236
	(.12640)	(.09604)	(.05085)
Proportion Non-Public Students	774.19	779.02	- 4.8277
	(468.80)	(356.10)	(188.60)
Proportion Adults with College Degrees	152.90	250.63	- 97.728
	(353.60)	(268.70)	(142.20)
Proportion Elementary Students	---	---	---
	---	---	---
Proportion AFDC Students	541.37	418.46	122.91
	(184.90)	(140.50)	(74.38)
Proportion from Female-Headed Households	- 425.27	- 211.14	- 214.13
	(456.90)	(347.10)	(183.80)
Average Number Children/Family	- 124.99	- 78.893	- 46.098
	(74.86)	(56.87)	(30.110)
Constant	690.1	353.4	336.7
R^2	.6647	.6217	.6689
Sum of Squared Residuals	.8894E 06	.5134E 06	.1439E 06
Number of Districts	104	104	104

* Standard errors are in parentheses.